

Screening South Texas Plant Seedlings for Salinity Tolerance

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Over 600,000 acres of South Texas land is affected by saline soil conditions. Land with sparse vegetation and severe erosion are often found to have accumulated salts within the soil. Weathering of parent material releases soluble salt ions such as Na^+ , Cl^- , Ca^{2+} , Mg^{2+} , SO_4^{2-} , and HCO_3^- that contribute to soil salinity. Elevated levels of these soluble salts restrict plant establishment in some areas South Texas. To better establish plants on saline and alkaline sites, young seedling responses to varying salinity levels requires further investigation.

The objective of this greenhouse study focused on evaluating seedling responses of 21 native and introduced plant species to elevated saline conditions. Three ebb-flow tables were set to water at one of three levels of sea salt solutions: 0, 15, and 30 dS/m. Plants were seeded in 98 containers per tray and then the trays were randomly placed on the tables with 4 replicates per species per table. Plant survival and biomass production were evaluated over a 4 month period during May-Aug 2006 and March-July 2007.

Once the data from this study is analyzed it should give us critical information on the plant species that exhibit the most salinity tolerance. These species may have the best chances for establishment on salt-affected soils. Results from this study will assist in the restoration of soils affected by salinity and provide important vegetative cover over areas prone to erosion.

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